DOINGWHATWORKS

Slideshow

FULL DETAILS AND TRANSCRIPT

Benchmarks in the National Mathematics Panel Report

May 2008

Topic: National Math Panel: Critical Foundations for Algebra

Practice: Mastery Framework

Highlights

- Definition and importance of benchmarks
- Basis for National Mathematics Panel recommendations
- Benchmarks for fluency with whole numbers
- Benchmarks for fluency with fractions
- Benchmarks for particular aspects of geometry and measurement
- Use of benchmarks

Full Transcript

Presentation Title: Benchmarks in National Mathematics Panel Report

The National Mathematics Advisory Panel Report lists Benchmarks for the Critical Foundations of Algebra. The Panel recommends specific benchmarks that elementary and middle school students need to achieve to be prepared for algebra.

Slide 1: Definition of Benchmarks

The sequential nature of mathematics makes it possible to identify an order of mastery for the foundational skills that are important for learning algebra. Benchmarks are statements describing a sequence of important mathematics concepts and skills to be mastered across the grades.

Slide 2: Points of Mastery

Benchmarks are points of mastery for skills. They indicate when students need to have developed proficiency in a skill that they may have been working on for several years.

Slide 3: Recommended Benchmarks

The National Mathematics Panel Report includes benchmarks, or mastery points, for three topic areas: fluency with whole numbers, fluency with fractions, and geometry and measurement. The benchmarks were arrived at by consensus, based on national and international curricula and standards.

Slide 4: Fluency with Whole Numbers

The report recommends two benchmarks related to whole numbers:

By the end of grade 3, students should be proficient in the addition and subtraction of whole numbers.

By the end of grade 5, students should be proficient with multiplication and division of whole numbers.

Slide 5: Fluency with Fractions

The report recommends six benchmarks related to fluency with fractions (including decimals, percent, and negative fractions). This is the most important foundational set of topics that are not currently receiving adequate attention.

Slide 6: Fractions: Grades 4 and 5

By the end of grade 4, students should be able to identify and represent fractions and decimals and compare them on a number line or with other common representations of fractions and decimals.

By the end of grade 5, students should be proficient with comparing fractions, decimals, and common percent and with the addition and subtraction of fractions and decimals.

Slide 7: Fractions: Grade 6

By the end of grade 6, students should be proficient in multiplication and division of fractions and decimals.

By the end of grade 6, students should be proficient with all operations involving positive and negative integers.

Slide 8: Fractions: Grade 7

By the end of grade 7, students should be proficient with all operations involving positive and negative fractions.

By the end of grade 7, students should be able to solve problems involving percent, ratio, and rate and extend this work to proportionality.

Slide 9: Geometry and Measurement

The report recommends three benchmarks for particular aspects of geometry and measurement that are critical for algebra success.

By the end of grade 5, students should be able to solve problems involving perimeter and area of triangles and all quadrilaterals having at least one pair of parallel sides (i.e., trapezoids).

Slide 10: Geometry and Measurement

By the end of grade 6, students should be able to analyze the properties of two-dimensional shapes, solve problems involving perimeter and area, analyze the properties of three-dimensional shapes, and solve problems involving surface area and volume.

By the end of grade 7, students should be familiar with the relationship between similar triangles and the concept of the slope of a line.

Slide 11: Use of Benchmarks

The benchmarks can be used by states, districts, and schools to guide the selection of curricula, the design of assessments, and the delivery of instruction.

Remember that the recommended benchmarks are for the critical foundations of algebra. They are not intended to be the only topics addressed in the Pre-K-grade 8 mathematics curriculum.